

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

A SUGGESTED PLAN FOR COTTON- CROP INSURANCE

LETTER

FROM

THE ACTING SECRETARY
OF AGRICULTURE

TRANSMITTING

A REPORT CONTAINING PERTINENT DATA AND INFORMATION
ASSEMBLED BY THE BUREAU OF AGRICULTURAL
ECONOMICS OF THE DEPARTMENT OF
AGRICULTURE RELATIVE TO CROP
INSURANCE FOR COTTON

MAY 2, 1939.—Referred to the Committee on Agriculture
and ordered to be printed



UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1939

LIBRARY
RECEIVED

★ MAY 11 1939 ★

U. S. Department of Agriculture

HOUSE RESOLUTION NO. 176

[Submitted by Mr. FULMER, of South Carolina]

IN THE HOUSE OF REPRESENTATIVES, U. S.,
May 1, 1939.

Whereas the Federal Crop Insurance Act, approved February 16, 1938, provided, in addition to making crop insurance available for wheat, that the Department of Agriculture conduct researches, surveys, and investigations relating to crop insurance for other commodities; and

Whereas appropriations were made for that purpose; and

Whereas legislation relative to crop insurance for cotton is now under consideration: Therefore be it

Resolved, That in order to promote the national welfare by alleviating the economic distress caused by the overproduction of cotton, and to provide for stable supplies of cotton for domestic consumption and the orderly flow thereof in interstate commerce, the Secretary of Agriculture be, and is hereby, directed to transmit to the House of Representatives such pertinent data and information as the Department of Agriculture may have assembled relative to such crop insurance for cotton.

Attest:

SOUTH TRIMBLE, *Clerk*.

CONTENTS

	Page
Summary.....	1
Hazards in cotton growing.....	1
Need for insurance protection as shown by variation in yields on individual farms.....	2
Crop insurance by private companies.....	4
Crop insurance as applied in the wheat program.....	4
Outline of suggested plan for cotton-crop insurance.....	6
Determination of insurance coverage and premium.....	8
Approximate average premium rates and average coverage per acre for sample counties.....	10
Premiums, indemnities, and reserves in cotton.....	11
Operating procedure.....	11
Some administrative problems.....	12
Cotton-crop insurance as part of the farm program.....	13
Estimate of amount of insurance reserve necessary.....	13

LETTER OF TRANSMITTAL

DEPARTMENT OF AGRICULTURE,
Washington, May 2, 1939.

Hon. WILLIAM B. BANKHEAD,
Speaker of the House of Representatives.

DEAR MR. SPEAKER: In accordance with House Resolution 176 approved by the House of Representatives on May 1, 1939, I hereby transmit data and other information prepared by the Bureau of Agricultural Economics on the subject of cotton-crop insurance.

Sincerely,

HARRY L. BROWN,
Acting Secretary.

LETTER OF SUBMITTAL

UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF AGRICULTURAL ECONOMICS,
Washington, D. C., May 2, 1939.

THE SECRETARY OF AGRICULTURE.

DEAR MR. SECRETARY: In accordance with the request contained in House Resolution No. 176, submitted by Mr. Fulmer of South Carolina, I am submitting herewith a report entitled "A Suggested Plan for Cotton Crop Insurance."

This report has been prepared by R. T. Baggett, associate agricultural economist, and Wm. H. Rowe, senior agricultural economist of this Bureau.

Sincerely yours,

H. R. TOLLEY,
Chief of Bureau.

FOREWORD

More than 2,000,000 American farmers depend on cotton for the major source of their income. Many of these farmers have at one time or another faced financial difficulties because of crop failures from causes beyond their control. The need for an agricultural program which provides protection against these unavoidable production hazards has long been evident. Crop insurance is suggested in this report as the way to meet these hazards.

Crop insurance is already available to wheat growers. The Federal Crop Insurance Corporation was established in 1938 within the United States Department of Agriculture under the Federal Crop Insurance Act. Farmers in all of the major wheat-producing States have already insured or will insure their wheat crops to be harvested in 1939. Wheat-crop insurance policies provide protection against drought, flood, winter-kill, insects, disease, and other wheat-crop hazards beyond the control of farmers.

Crop failures occur practically every year in one part or another of the Cotton Belt. As a consequence, farmers who experience these crop losses have little or no income on which to live. Crop insurance would provide the cotton farmer with a better distribution of income from year to year and would alleviate some of the hardship brought about by crop failure. The fact that a very large part of the cotton crop is financed through credit means that failure of the cotton crop not only reduces the income available for farm living expenses but frequently results in a carry-over of debt that may not be paid for years. Insurance on the crop would enable many farmers to pay their debts despite crop failures.

Crop insurance is not a solution to all the cotton farmers' problems, for many are world-wide in their scope. It would, however, make a substantial contribution toward the solution for many farmers of the problems that are caused by extreme variations in crop production.

The Federal Crop Insurance Act provided not only for an insurance program for wheat but for research on other crops to determine the feasibility of extending insurance protection to them. This report by the Bureau of Agricultural Economics, suggesting a plan that might be used for insuring cotton crops, is a product of the research provided for in that act.

A SUGGESTED PLAN FOR COTTON-CROP INSURANCE

SUMMARY

The plan for cotton-crop insurance outlined in this report is comparable in most respects to the wheat crop-insurance program now being administered by the Federal Crop Insurance Corporation. The State and county agricultural conservation committees already established in other farm programs would be used in the administration of the program.

Under the plan here suggested, a cotton farmer who took insurance would be assured a yield of cotton equal to either three-fourths or one-half of the average yield of his farm. For this insurance protection he would pay a premium based in part on the crop-loss experience of his farm and in part on the crop-loss experience for the county in which his farm is located. Thus each farm would have a separate coverage per acre and a separate premium rate per acre. The premiums and indemnities that are determined in lint cotton might both be increased a certain percentage to provide protection against loss of cottonseed as well as lint cotton.

The plan proposed herein is one for insurance "in kind" with premiums and indemnities being determined in lint cotton and payable in cotton or the cash equivalent. The insurance reserves built up out of premiums would be carried in cotton. Premiums received in cash would be invested in cotton. Claims for losses could be paid by issuing warehouse receipts for cotton, or by selling cotton from the reserve and delivering the cash equivalent thereof. Cotton reserves would not be used to pay obligations arising out of losses on other insured crops.

The plan provides that the premiums charged for insurance shall be adequate to cover the average losses for a representative period of years. It is recognized, however, that losses in any one year may exceed premiums collected and, as a consequence, it would be necessary that either capital or an insurance reserve be provided for the inauguration of such a program.

In view of the many hazards that affect the cotton crop and the large number of farmers who are subject to crop failure, it is believed that a program of cotton-crop insurance would meet a real need and should be a fundamental part of the Federal Government's program for agriculture.

HAZARDS IN COTTON GROWING

The risks that the cotton farmer must face in producing a crop of cotton are as great as those involved in the production of any of our other important crops. Weather hazards are the most important.

Furthermore, weather conditions affect the risks from other causes such as insect infestations and plant diseases. The figures in table 1 show the causes of damage to the cotton and wheat crops and the percentage reduction from full yield from each cause.

TABLE 1.—*Percentage reduction from full yield per acre of cotton and wheat from stated causes, 1916-25*¹

Cause	Reduction from full yield		Cause	Reduction from full yield	
	Cotton	Wheat		Cotton	Wheat
	<i>Percent</i>	<i>Percent</i>		<i>Percent</i>	<i>Percent</i>
Climatic conditions:			Plant diseases.....	1.0	5.2
Deficient moisture.....	11.9	12.1	Insect pests.....	18.6	2.9
Excessive moisture.....	6.0	2.4	Animal pests.....		.1
Floods.....	.9	.3	Defective seed.....	.1	.1
Frost or freeze.....	1.1	4.5	Other and unknown causes...	.4	.3
Hail.....	.4	1.3	Total all causes.....	41.9	31.5
Hot winds.....	.9	1.9			
Storms.....	.5	.2			
Other climatic.....	.1	.2			
Total climatic.....	21.8	22.9			

¹ Average of annual estimates made by crop reporters of the U. S. Department of Agriculture and published in Crops and Markets, vol. 3, Supp. 10, Oct. 1926.

It would appear from these figures that insect pests are the largest single hazard in cotton growing. That hazard may be overrated in the table, because the most severe damage from boll weevils occurred during this period when weevil infestation was spreading eastward and before effective control measures were developed. Nevertheless, the damage from these insects is still one of the most important causes of low cotton yields, especially in the Southeastern States.

The second hazard of major importance for the Cotton Belt as a whole is deficient moisture. Severe droughts in the entire cotton-growing region are infrequent, but crop failures or near failures from deficient moisture occur practically every year in some part of the Cotton Belt. Disastrous results followed widespread droughts in 1918, 1925, 1930, 1934, and 1936. States in which droughts are a constant threat to cotton growers normally produce about one-half of the American cotton crop.

NEED FOR INSURANCE PROTECTION AS SHOWN BY VARIATION IN YIELDS ON INDIVIDUAL FARMS

Yields for a period of 5 years on sample farms in typical counties have been analyzed to determine how frequently indemnity for loss would have been paid if a cotton crop-insurance plan similar to the wheat crop-insurance plan had been in effect. The analysis is based on the assumption that indemnification against loss would have been made whenever the yield in any year fell below either 75 percent or 50 percent, respectively, of the average yield for the insured farm. The results of the analysis are shown in table 2 which is based on the experience for the 5 years, 1933-37, of sample cotton farms selected at random in four cotton counties. The need for cotton-crop insurance is reflected by the occurrence of crop failures or substantially reduced yields on these individual farms.

TABLE 2.—Number of sample farms having losses that would require indemnification under 75- and 50-percent insurance plans and the number having lint yields within specified ranges by years ¹

Year	Average yield of all sample farms (pounds lint)	Number of farms having losses		Number of farms having lint yields of—					
		75-percent plan	50-percent plan	0 pound	1 to 50 pounds	51 to 100 pounds	101 to 200 pounds	201 to 300 pounds	301 pounds and over
75 FARMS IN A WEST TEXAS COUNTY									
1933-----	153	28	9	0	7	21	26	16	5
1934-----	23	74	73	39	29	6	1	0	0
1935-----	163	14	3	1	1	10	45	12	6
1936-----	164	16	3	0	1	8	58	8	0
1937-----	313	1	0	0	0	2	10	27	36
75 FARMS IN A SOUTHWESTERN OKLAHOMA COUNTY									
1933-----	240	3	3	1	3	3	18	32	18
1934-----	73	60	34	8	15	33	14	3	0
1935-----	145	13	2	0	5	15	44	10	1
1936-----	66	62	42	10	27	25	11	0	1
1937-----	157	14	6	2	6	12	39	7	9
99 FARMS IN A WEST GEORGIA COUNTY									
1933-----	248	30	0	0	0	0	23	56	17
1934-----	275	22	2	0	0	1	18	50	30
1935-----	287	15	0	0	0	0	14	51	34
1936-----	300	7	2	0	0	1	8	46	44
1937-----	407	2	1	0	0	0	3	17	79
66 FARMS IN A SOUTH CAROLINA COUNTY									
1933-----	175	54	24	0	1	15	28	19	2
1934-----	358	1	0	0	0	0	6	21	39
1935-----	319	5	0	0	0	0	9	25	32
1936-----	395	3	0	0	0	1	2	18	45
1937-----	309	10	0	0	0	0	7	24	35

¹ Data are based on actual lint yields during the years 1933-37 on sample farms selected at random in the 4 representative counties. A farm would have a loss when the lint yield in any of the years fell below 75 or 50 percent, respectively, of the 5-year average yield of that farm. Coverage would vary from farm to farm and might be above or below the average yield of all sample farms in the county.

It is obvious from table 2 that a substantial number of losses would have been indemnified in each county during this period. In the west Texas county, 74 of the 75 farms would have required indemnification for losses in 1934. Complete failures occurred on 39 of the 75 farms in that year. The losses were more frequent in the Texas and Oklahoma counties than in the Georgia and South Carolina counties. The yields were much higher in the Georgia and South Carolina counties, but with the higher coverage resulting therefrom, a considerable number of losses during the 5-year period would have required indemnification.

The fact that losses occur infrequently is not an indication that insurance protection is not needed. This is illustrated by the experience with wheat-crop insurance and with fire insurance. The demand for wheat-crop insurance has been just as pronounced east of the Mississippi River where crop failures are infrequent as in the Great Plains where crop failures are common. Fire insurance protection is

carried by a large proportion of farmers, yet, as a matter of fact, an individual may not have a fire loss in a lifetime.

CROP INSURANCE BY PRIVATE COMPANIES

Except for 2 or 3 years early in the 1920's, no "all-risk" insurance on growing cotton crops has been available. In 1920, 1921, and 1922, certain fire insurance companies wrote general crop-insurance policies rather extensively in the Cotton Belt. In effect, these policies guaranteed the farmer a specified income from each acre insured. Indemnification for loss was therefore necessary if the insured failed to receive the guaranteed income either because of failure to make a crop or because of low prices. The severe drop in prices and low yields occurring in 1920 and 1921 caused the companies to suffer heavy losses, because they were called on to pay indemnities sufficient to raise the income per acre on the insured crop to the guaranteed figure. These unfortunate experiences caused the companies to discontinue insuring the cotton crop. In fact, unfortunate experiences in cotton and other crops caused the companies to withdraw almost entirely from the crop-insurance business, except for hail insurance.

Hail insurance is available in the cotton-growing States, and many farmers purchase such insurance on their cotton crops. The bulk of hail insurance written on growing crops, however, is found in the Great Plains area, and it is to be noted from table 1, showing causes of damage to crops, that hail is a relatively minor hazard in the production of cotton. (See table 1.)

Within the last year an insurance company in Texas has offered for sale an essentially "all-risk" policy on growing cotton crops. In effect, the insurance guarantees an income per acre equivalent to what the insured declares to be his cost of production. This policy was offered too late for the 1938 crop. The company contemplates writing insurance on the 1939 crops as soon as the cotton is out of the ground.

A type of insurance offering protection only against production hazards, as distinguished from crop-income hazards, has never been available to cotton farmers.

CROP INSURANCE AS APPLIED IN THE WHEAT PROGRAM

The development of a plan for insuring cotton yields involves many problems that are common to those of insuring other field crops. An outline of the wheat program which is already under way will illustrate the practical application of crop-insurance principles to this crop, and should serve as an indication of how some of the problems are being worked out.

The Federal Crop Insurance Act providing for insurance on wheat crops was passed by Congress and approved by the President as a part of the Agricultural Adjustment Act of 1938. This act provides for "all-risk" insurance coverage against unavoidable production hazards on wheat crops. Wheat farmers in all parts of the country who have crop-insurance policies on the crop to be harvested in 1939 are now protected against a shortage in yield below either 75 or 50 percent of their average yield.

Under this plan of yield insurance, the amount of coverage per acre for an individual farm is determined by the average yield on that

farm for the years 1930-35, adjusted to reflect the yield for the 10-year period 1926-35. If the 10-year average yield per acre is 20 bushels, coverage under the 75-percent plan would be 15 bushels per acre. In case the farm yield during the policy year amounted to 9 bushels per acre, the amount of indemnity payable would be 6 bushels per acre.

Premium rates vary from farm to farm and are determined by averaging the crop-loss experience for the farm with the crop-loss experience for the county in which the farm is located. The farm-loss experience for computing premium rates is the average annual loss per acre that would have been indemnified had the farm been insured during the 10-year period. Similarly, county-loss experience is the composite average annual loss per acre as determined by actuarial studies of sample farms in the county.

The extent of the operations of the Federal Crop Insurance Corporation during the first year is illustrated by the number of policies issued (or to be issued). The following table shows the number of policies issued (or to be issued) through March 31, 1939, in the predominantly winter-wheat States where the collection of premiums for insuring the wheat crop to be harvested in 1939 has been substantially completed:

Predominantly winter-wheat States:	<i>Number of policies as of Mar. 31, 1939¹</i>
New Jersey.....	29
New York.....	653
Delaware.....	79
Pennsylvania.....	2, 301
Virginia.....	914
Maryland.....	982
Ohio.....	10, 337
Indiana.....	11, 223
Illinois.....	12, 262
Iowa.....	4, 650
Michigan.....	5, 077
Wisconsin.....	153
Nebraska.....	12, 841
Kansas.....	14, 966
Missouri.....	15, 897
Oklahoma.....	8, 850
Texas.....	3, 708
Utah.....	447
Colorado.....	929
New Mexico.....	112
Total.....	106, 410

¹ Includes policies to be issued on which the premiums have been paid. The receipt of premiums is almost invariably followed by the issuance of a policy. Since there is some lag between the receipt of premiums and the issuance of policies, the inclusion of policies to be issued gives a more complete figure.

The following table shows the number of policies issued (or to be issued) as of March 31, 1939, in States other than the predominantly winter-wheat States. Collection of premiums is not complete in these States. Consequently, these figures do not reflect the final status of the program as accurately as the figures representing policies issued (or to be issued) in the predominantly winter-wheat States. Additional policies will be issued in most of these States.

*Number of
policies as
of Mar. 31,
1939¹*

Other States (spring and winter wheat):

North Dakota.....	5, 269
Minnesota.....	4, 824
Montana.....	1, 958
South Dakota.....	4, 186
Wyoming.....	246
Washington.....	1, 244
Oregon.....	519
California.....	974
Idaho.....	1, 376
Total.....	20, 596

¹ Includes policies to be issued on which the premiums have been paid. The receipt of premiums is almost invariably followed by the issuance of a policy. Since there is some lag between the receipt of premiums and the issuance of policies, the inclusion of policies to be issued gives a more complete figure.

OUTLINE OF SUGGESTED PLAN FOR COTTON-CROP INSURANCE

It would appear that a crop-insurance program for cotton should incorporate certain of the basic features applied in the insurance of wheat. The following provisions should be given consideration:

(1) Insurance to cover losses in yields of cotton due to unavoidable causes such as drought, flood, hail, frost, tornado, storm, excessive or deficient moisture, insect damage, and plant diseases. Such insurance would not cover losses due to the neglect or malfeasance of the producer, use of defective seed, failure properly to care for or harvest the crop, damage to quality, or loss by theft.

(2) The insurance to cover all cotton grown on the farm and not the crop from a specified acreage only.

(3) The amount of insurance per acre to be based on a percentage of the actual or appraised average yield per acre for the insured farm during a representative period. This will prevent over-insurance on low-yielding farms and under-insurance on high-yielding farms. The insured percentage of the average yield per acre on the insured farm would be either 75 percent or 50 percent.

(4) A separate premium rate per acre to be fixed for each farm based on the average of the actual or appraised loss experience for the insured farm and the loss experience for the county or area as reflected by a representative sample of farms. This is a compromise between a complete individual-rating plan and a flat-rate plan. The loss experience for the insured farm will reflect those risks that are related primarily to the farm, its soil, management, etc. The average loss experience for the county reflects better than the individual farm experience those risks that are as likely to affect one farm as another, such as storms and drought. A minimum premium rate would be established to provide for possible losses not reflected in the loss experience of the base period.

(5) The amount of premiums and the amount of indemnities for crop losses to be determined in pounds of lint cotton; both to be determined in cotton of the same quality. Payment would be made in either cotton or its cash equivalent, ordinarily at the option of the insured, but depending upon which is feasible and suitable to the insuring agency. Consideration should be given to a plan whereby the applicant could pay his premium by assigning, or the Agricultural Adjustment Administration on his behalf advancing, payments due him or which he can earn for participation in the agricultural conservation program.

(6) Insurance reserves built up out of premiums to be held in cotton. Since the obligations under the policy would be in cotton rather than in dollars, this would eliminate risk from fluctuations in price. This feature would ordinarily contribute also to reducing fluctuations in market supplies and prices by taking cotton off the market in years of good crops, when premiums would exceed indemnities, and placing cotton on the market in years of poor crops, when indemnities would exceed premiums. Cotton held in the reserve would be sold only to pay indemnities for crop losses, to prevent damage to the cotton, or to provide for convenience in handling. If sold to prevent damage or to provide for convenience in handling, the cotton should be promptly replaced.

(7) Local administration of the program to be entrusted largely to the county and local committees established by the Department of Agriculture in cooperation with State agencies for the administration of the Agricultural Adjustment Act and the Soil Conservation and Domestic Allotment Act.

(8) The cotton crop-insurance program to be coordinated with other programs administered by the Department. These programs have as one of their basic features the reduction of some of the risks of farming. This coordination could be accomplished in substantial measure by limiting the total insurance protection on a farm to the amount of insurance that would be available on the cotton acreage allotment assigned to that farm by the Agricultural Adjustment Administration.

(9) Insurance policies to be written on an annual basis at least during the first 2 years.

In addition to the above basic features similar to those incorporated in the wheat crop-insurance program, certain additional features for cotton-crop insurance should be included. They are:

(1) Reserves accumulated out of premiums for cotton-crop insurance not to be available to meet losses on any other commodity insured. Correspondingly, reserves accumulated out of premiums on other crops should not be used for losses on cotton.

(2) In the case of tenants renting on a share or cash basis who furnish their own equipments, funds, etc., and operate independently, separate policies to be issued to landlord and tenant, representing the share or interest of each in the crop. Either could insure his interest alone.

(3) In the case of farms operated by sharecroppers or "half-and-half" tenants who furnish only labor and a portion of certain expenses and usually have one-half interest in the crop, a single policy might be issued for the entire farm under an arrangement whereby premiums and indemnities could be apportioned between the landlord and each cropper on the basis of the share or interest of each in the crop. Each person on a farm or plantation applying for insurance would be required to take insurance on all acres on the farm or plantation in which he had an interest in the cotton crop.

(4) Indemnification for loss of lint-cotton yields does not provide full protection against cotton-crop losses because of the additional loss of cottonseed. For the Cotton Belt as a whole, about 35-percent lint and 65-percent seed approximates the weight outturn from seed cotton. On this basis, the average returns from seed during the period 1924-38, inclusive, amounted to about 19 percent of the returns from lint. Insurance of seed-cotton yields would provide more adequate protection than insurance of lint yields only, but this is not feasible because

data on seed-cotton yields for individual farms are not available for developing an actuarial basis for seed cotton, and because many additional administrative problems would be involved.

Consequently, as an approach to insuring seed-cotton yields, it is suggested that both premiums and indemnities for loss, determined in lint cotton, be increased by a percentage which on the average reflects the proportion that cottonseed represents of the lint returns from the crop.

A plan based on the average relationship would be much simpler to administer than a plan based on the relationship for each individual farm, and it would be equitable because the premium in any crop year would be increased by the same percentage that any indemnity for loss on that crop would be increased.

The percentage used might be the average of the relationship between seed and lint returns (assuming a 65-35 weight relationship) existing during the years used for computations of yields and premium rates. By the use of an average for such a period of years the change in the percentage from year to year would be small.

This plan would provide protection against losses of cottonseed as well as losses of lint cotton by the use of actuarial data which are available only in terms of lint. The additional premiums received would cover additional indemnities for loss that would be required. Since obligations arising for indemnification of loss of cottonseed would be in terms of lint cotton, the reserves built up out of premiums would be carried in lint cotton.

(5) The insurance to apply to all cotton grown in the United States except Sea Island cotton, any other cotton for which adequate actuarial data could not be obtained, and cotton grown purely for experimental purposes by individuals or institutions where commercial production is not the primary object. The insuring agency should have the authority to condition the issuance of such insurance in any county or area upon a minimum degree of participation in a cotton crop-insurance program.

DETERMINATION OF INSURANCE COVERAGE AND PREMIUM ¹

The amount of insurance per acre on any farm would be a percentage of the average yield of lint cotton per planted acre on that farm. The percentage might be either 75 or 50 percent, generally at the option of the applicant. In determining the amount of premium per acre, it would be necessary first to determine from the annual yields in past years how much loss per acre would have been indemnified if the farm had been insured those years. The average loss per year that would have occurred represents the loss experience for the farm. The loss experience for the county would be determined in a like manner from actuarial studies of sample farms in the county. The determination of county-loss experience is part of the research work now being carried on in the Bureau of Agricultural Economics. The premium per acre for a farm would be an average of the crop-loss experience for the farm and the crop-loss experience for the county. Table 3 illustrates the procedure for an individual farm.

¹ The premium rate per acre illustrated in this section would be subject to increase for the plan outlined elsewhere in this report providing for an increase in the indemnities and premiums so that protection against loss of cottonseed would be included.

TABLE 3.—*Procedure for determining the amount of insurance and the premium rate per acre for a farm in southwestern Oklahoma*¹

Year	Yield per planted acre	Insurance coverage per acre under the 75-percent plan	Loss ex- perience
	<i>Pounds lint</i>	<i>Pounds lint</i>	<i>Pounds lint</i>
1933.....	239	104	0
1934.....	132	104	0
1935.....	183	104	0
1936.....	44	104	60
1937.....	93	104	11
Total.....	691		71
Average.....	138		14.2
Average loss experience per acre for farm.....			14.2
Average loss experience per acre for county.....			16.6
			30.8
Annual premium per acre for this farm (30.8÷2).....			15.4

¹ The provision for increasing indemnities for loss and premium rates to provide for protection against loss of cottonseed is not included in this table.

Table 3 was based on the experience for the 5 years 1933–37. Data for 1938 will be available soon to make a 6-year base period possible, but even that period is perhaps too short to furnish a representative basis for insurance. It is believed, therefore, that the yield should be adjusted to a longer period, perhaps to the 11-year period 1928–38, inclusive.

The procedure to adjust to the 10-year period 1928–37 would be as follows: The average yield for this farm was 138 pounds per acre. To this would be added 32 pounds, because the average county yield for the 10 years was 32 pounds higher than the average county yield for the last 5 years. This would make an adjusted average yield of 170 pounds. The coverage per acre under the 75-percent plan would be 75 percent of 170 pounds, or 128 pounds. Therefore, in order to reflect the 10-year experience, the actual coverage would be 128 pounds per acre, rather than 104 pounds as shown in the above illustration.

The crop-loss experience would also need to be adjusted to the 10-year basis. Actuarial studies for this county indicate that the crop-loss experience for the 10 years would be about 1 pound more per acre than the loss experience for the 5 years. Consequently, to reflect the 10-year loss experience, the premium per acre should be about 1 pound higher than that shown in the table. A slightly different coverage and loss cost would probably be determined had 1938 data been included in this illustration. Such data will be available before a cotton crop-insurance program can be put into effect.

It should be noted that the premium rate per acre depends more on the variability in yields than on the size of average yield or the amount of insurance per acre. Special attention is called to this because it is customary insurance practice to set a premium rate of a certain amount per hundred or per thousand dollars of coverage. Very early in the research work on crop insurance it was discovered that the amount of loss per acre ordinarily bears little relationship to the amount of coverage per acre. The amount of loss per acre is more directly related to the variability in yields than to the average level of yields. As a consequence it will sometimes happen that farms

having a high coverage per acre will have a low premium rate per acre, and farms having a low coverage per acre may have a high premium rate per acre.

In the case of farms for which reliable and applicable records of annual acreage and production are not available, the yields and loss experience will have to be appraised. Actual records are often inapplicable because they do not reflect the probable experience for future years, especially if there is a new operator on the farm or if significant changes have occurred in farming practices of the operator. Personal factors become exceedingly important with the extension of crop insurance to a cultivated crop. The timeliness and quality of tillage and harvesting operations, the use of fertilizer, measures used for protecting the crop from insects, etc., are all factors that relate primarily to the quality of management rather than to the farm itself. The improper application of one or more of these factors, whether due to negligence of the insured or not, might mean the difference between a good crop and one on which an indemnity for loss would have to be paid. Yields and losses must be determined with due consideration to management factors if adequate provision is to be made for probable future losses.

APPROXIMATE AVERAGE PREMIUM RATES AND AVERAGE COVERAGE PER ACRE FOR SAMPLE COUNTIES

Actuarial data are as yet available only for a few sample counties. The preparation of additional actuarial data similar to those shown in table 4 is now under way in the Bureau of Agricultural Economics.

TABLE 4.—*The approximate average premium rates and average coverage per acre under the 75- and 50-percent plans in specific counties*¹

State and county	Average yield 1928-37	75-percent plan		50-percent plan	
		Average premium rate	Average coverage	Average premium rate	Average coverage
Georgia:	<i>Pounds lint</i>	<i>Pounds lint</i>	<i>Pounds lint</i>	<i>Pounds lint</i>	<i>Pounds lint</i>
Carroll.....	253	5	190	1	128
Cherokee.....	228	3	171	1	114
Early.....	202	7	152	1	101
Jenkins.....	225	9	169	1	112
South Carolina:					
Allendale.....	204	7	153	2	102
Anderson.....	247	6	185	1	124
Darlington.....	231	14	173	3	116
Orangeburg.....	244	9	183	2	122
Oklahoma:					
Beckham.....	140	18	105	8	70
Comanche.....	114	17	86	8	57
Johnston.....	121	12	91	4	60
Muskogee.....	126	18	94	6	63
Payne.....	120	15	90	5	60
Texas:					
Bell.....	149	5	112	1	74
Brazoria.....	187	19	140	9	94
Brazos.....	168	11	126	5	84
Denton.....	144	9	108	2	72
Hardeman.....	122	20	92	10	61
Hunt.....	156	7	117	2	78
Jones.....	120	17	90	7	60
Lubbock.....	157	26	118	14	78
Nacogdoches.....	166	8	124	2	83
Nueces.....	201	11	151	3	100

¹ A minimum premium rate would probably be established under both the 75- and 50-percent plans. The premium rate per acre illustrated in the table would be subject to increase for the plan outlined elsewhere in this report providing for an increase in indemnities and premiums so that protection against the loss of cottonseed would be included.

Yields shown in table 4 are the county averages for the 10-year period 1928-37, inclusive, as reported by the Division of Crop and Livestock Estimates of the Bureau of Agricultural Economics, and coverage figures shown in the table are based on such yields. The county premium rates represent the average loss experience of sample farms in each county during the years 1933-37, inclusive, adjusted to reflect the experience during the 10 years 1928-37. It should be kept in mind that the coverage per acre on a farm under the plan suggested would be determined from the actual or appraised yield of that farm. The premium rate per acre for a farm, however, would be the average of the loss experience for the farm and the loss experience for the county, as explained elsewhere in this report.

PREMIUMS, INDEMNITIES, AND RESERVES IN COTTON

It is believed, as stated previously, that cotton-crop insurance should be based on the principle of payment "in kind." For a large proportion of the farms, however, the premiums charged would represent quantities of cotton too small to be handled individually. It is probable that premiums in such cases would be paid in the cash equivalent of the cotton or by assignment or offsets of agricultural conservation program payments. In other words, the amount of the premium would be determined in pounds of lint cotton, and the cash payment would represent the market price of such cotton.

Premiums collected in cash would immediately be invested in cotton so that the insurance reserves built up out of premiums would be held in cotton. When claims for losses were settled, the insured would be given either a warehouse receipt for cotton, or cotton from the reserve would be sold and he would be given cash. If cotton received as indemnity for loss in any year were eligible for loans under the Agricultural Adjustment Act of 1938, it is probable that a substantial portion of indemnities for loss might be paid in cotton or warehouse receipts therefor.

By holding the reserves in cotton, the Corporation would not be subject to loss by reason of fluctuations in price. The amount of loss payable under any policy would be determined in pounds (or bales), and the cotton with which to pay that obligation would be available regardless of what happened to the price.

OPERATING PROCEDURE

The following illustration will outline roughly a suggested operating procedure. Prior to planting, the cotton farmer, if he wanted insurance, would make application for insurance to the county agricultural conservation committee. If such farmer had operated the same farm for the years 1933-38, the necessary acreage and production records would probably all be available in the county office. If he had not operated the farm continuously for those years, if records were not available for all of the years, or if for some reason the available records were not applicable, the county committee would appraise the average yield and the average loss experience for the farm. The premium would be determined and paid at the time of making application.

The insured crop would be inspected during the growing season to determine that proper care was being taken of the crop. If any material damage occurred during the growing season, such as hail, the insured would be required to report that fact to the county committee.

If, prior to the beginning of picking the crop, it appeared that the quantity of cotton available for harvest would probably be less than the quantity for which the crop was insured, the policyholder would be expected to notify the county committee. This would give an opportunity to send an adjuster to the farm to examine the insured crop before any cotton was picked and to estimate the probable yield therefrom. The insured would be required to keep accurate records of the quantity of cotton that was harvested and when claim for indemnification for a loss was made, to submit evidence of the quantity that was ginned and sold. If his share of such production was not as large as the total quantity of insured production on his policy, the difference would be considered a loss under the policy and the insured would be indemnified for that loss.

After the adjuster and the insured came to an agreement on the amount of loss, the claim would be settled within a short time. If the insured desired payment in cotton rather than in cash, he could probably receive a warehouse receipt for the quantity of cotton due him. This warehouse receipt would be for cotton of the same quality as that used by the insured in payment of his premium; it might not be for the same quality as that produced on his farm during the particular year. If payment in cash rather than in cotton were desired, the claim could be settled in cash through the sale of cotton from the reserves.

SOME ADMINISTRATIVE PROBLEMS

With the extension of crop insurance to a cultivated crop, personal factors can be expected to offer administrative problems somewhat different from those encountered in the wheat insurance program. Difficulties arising because yield records for many farms are inapplicable for crop insurance purposes, or are not available in many cases for identical farms, are referred to elsewhere in this report.

Another administrative difficulty is the large proportion of small farming units in cotton. More than 16 percent of all cotton farms for which applications under the Bankhead Cotton Act were made covering the years 1928-34, had an average annual production of two bales per year or less, as shown in table 5.

TABLE 5.—*Percentage of all cotton farms on which average production fell within specified ranges and the percentage of total production and acreage represented by each production group*¹

Production (478-pound bales)	Percentage of farms		Percent of total production	Percent of total acreage
	Percent of total farms	Cumulative percentage of total farms		
0 to 2.0.....	16.2	16.2	1.5	2.6
2.1 to 5.0.....	29.8	46.0	9.1	11.2
5.1 to 10.0.....	25.1	71.1	15.9	17.7
10.1 to 16.0.....	12.4	83.5	13.6	14.6
16.1 to 25.0.....	7.9	91.4	13.7	14.2
25.1 to 40.0.....	4.8	96.2	13.1	12.8
40.1 to 65.0.....	1.6	97.6	6.8	6.3
65.1 to 75.0.....	1.0	98.8	5.3	4.7
75.1 to 100.0.....	.5	99.3	3.9	3.3
100.1 and over.....	.7	100.0	16.8	12.6

¹ Condensed from Agricultural Adjustment Administration data on the total number of farms for which base applications were made under the Bankhead Cotton Act. Production is the average for the years 1928-34, inclusive, and is based on the adjusted average production and acreage by farms, rather than by producer units.

Over 71 percent of all cotton farms had an average annual production of less than 10 bales each during the years 1928-34, inclusive. Practically 27 percent of the total cotton production and 31 percent of the acreage during those years was on farms averaging 10 bales or less each year. This large number of small farms probably will add to the administrative problems in connection with a cotton-crop-insurance program.

COTTON-CROP INSURANCE AS PART OF THE FARM PROGRAM

The Department of Agriculture has regarded crop insurance as part of the general agricultural program of the Federal Government and not a separate program by itself. The wheat crop-insurance program has been administered in the States and counties by the agricultural conservation committees established for the administration of other programs. This has resulted in a coordination of crop insurance with other programs. Similar committees already established in cotton-producing counties are available for the administration of a cotton crop-insurance program.

A cotton crop-insurance program should not counteract the activities under other programs. For example, the maximum insured production of any farm should not be more than it would be if computed on the basis of the cotton-acreage allotment established for the farm under the agricultural-conservation program. Under such an arrangement the insurance program would not be used to guarantee a production on an acreage in excess of that which was deemed in another program to be the insured farmer's proper share in the total cotton acreage.

In formulating a cotton crop-insurance program serious consideration should be given to a plan under which the applicant for insurance could pay for insurance by his assigning, or the Agricultural Adjustment Administration on his behalf advancing payments due or which he can earn for participation in agricultural conservation programs. The amounts to be deducted as premium should be determined by the method outlined earlier in this report for the calculation of the necessary premiums.

One of the important problems encountered in the wheat crop-insurance program has been the lack of funds with which to pay premiums before the closing date for acceptance of such premiums. This lack of funds has been due not only to low income, but to inability to obtain credit. A provision such as that outlined above whereby agricultural-conservation-program payments could be used as premiums would help solve this problem.

Other important advantages of this plan are that it would increase the number of farmers who could conveniently pay for their insurance and therefore, would increase the number of farmers whose crops would be insured. It would also reduce the cost of securing participation in the insurance program and the cost of collecting premiums.

ESTIMATE OF AMOUNT OF INSURANCE RESERVE NECESSARY

In attempting to estimate the amount of insurance reserve that would be required in a cotton crop-insurance program, it has been necessary to apply the result of studies in a small sample of counties to the whole Cotton Belt. Furthermore, it has been necessary to

make several assumptions. One assumption made is that the 75-percent plan would be the plan most commonly accepted. Another is that the loss experience in future years would be the same as in the years 1933-37. A third assumption is that three-fourths of the cotton acreage planted would be insured.

The method of making the estimate has been to determine what the maximum deficit would have been during the 5 years, 1933-37, if three-fourths of the acreage planted to cotton had been insured. It could not be expected that premiums collected each year would be even approximately equal to the indemnities for loss each year. Premium rates are based on average loss experience and over a long period should be adequate to meet losses. However, years of wide-spread crop failure might occur before years of small losses. As a consequence, table 6 has been set up to show the probable premiums and the probable indemnities that would have been paid during each of the 5 years and the excess or shortage each year.

TABLE 6.—*Probable quantity of cotton that would have been involved in a 75-percent insurance plan based on the experience during the years 1933-37, assuming that three-fourths of the total planted acreage had been insured*¹

ARRANGEMENT OF YEARS 1933-37				
Year	Probable premiums	Probable indemnities	Excess of premiums over indemnities	Cumulated balance
	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>
1933.....	607, 144	982, 240	-375, 096	-375, 096
1934.....	420, 244	723, 572	-303, 328	-678, 424
1935.....	419, 155	270, 484	+148, 671	-529, 753
1936.....	462, 785	388, 267	+74, 518	-455, 235
1937.....	509, 367	81, 216	+428, 151	-27, 084

ARRANGEMENT OF YEARS 1937-33				
1937.....	509, 367	81, 216	+428, 151	+428, 151
1936.....	462, 785	388, 267	+74, 518	+502, 669
1935.....	419, 155	270, 484	+148, 671	+651, 340
1934.....	420, 244	723, 572	-303, 328	+348, 012
1933.....	607, 144	982, 240	-375, 096	-27, 084

¹ Figures are for 478-pound net-weight bales. The provision for increasing indemnities and premiums by a certain percentage to cover losses of cottonseed was not considered in the preparation of this table.

The third column in table 6 shows the excess of premiums over indemnities, or the shortage of premiums in each of the years. Excess figures are shown by positive numbers and shortages by negative numbers. The fourth column shows the cumulated balance of the excess or the shortage. It happens that in the order of years 1933 to 1937 the years of largest losses come first. The largest negative figure in the cumulated balance column shows the maximum amount that it would have been necessary to draw from an insurance reserve other than the reserve built up from premiums. The reverse arrangement of years in the second part of the table shows the maximum cumulation of reserves out of premiums that would have been built up during the 5-year period, if years of small losses had come first.

Total premiums were estimated by applying the county-average premium rate for sample counties in Georgia and South Carolina to three-fourths of the planted acreage in all States except Texas,

Oklahoma, and New Mexico. Similarly, the county average premium rate for sample counties in Texas and Oklahoma was applied to three-fourths the planted acreage in Texas, Oklahoma, and New Mexico. The estimated premiums in the two areas were combined to give a total premium for the 19 cotton-growing States. In this tabulation the variation in total premium as between years is due only to variation in acreage, for the same premium rate was used each year. Total indemnities were determined by applying the average loss experience per acre per year in the sample data by areas to three-fourths of the total planted acreage.

Because 1933 was an unfavorable year in the Southeastern States and 1934 was a year of very low yields in the Southwestern States, primarily because of droughts, the total indemnities would have exceeded the total premiums in those years so that a maximum deficit of 678,424 bales would have accumulated. The last 3 years were generally more favorable. The table is based on premiums computed from losses shown in the 5 years. Naturally, the total premiums collected in the 5 years should pay all losses in these years. The discrepancy of 27,084 bales is due to the averaging of the rates giving figures for each county equal weight.

The maximum amount of reserve cotton that would have been accumulated out of premiums had the order of years been reversed so that years of surplus had preceded years of shortage would have been 651,340 bales.

The data on which the estimate of a maximum shortage of 678,424 bales is based represent a very small sample of counties for estimating the amount of insurance reserve that would be necessary for the inauguration of a cotton crop-insurance program. Moreover, it so happened that no severe losses occurred throughout the entire Cotton Belt during any of the years, and in addition 1937 was a year of very high yields for the Cotton Belt as a whole. Furthermore, the provision mentioned elsewhere in this report for increasing indemnities and increasing premiums by a certain percentage to take care of losses of cottonseed has not been taken into consideration in preparing table 6, and, if it were, the maximum shortage and excess shown in this table would be higher by such a percentage. In view of these considerations, it is believed that the insurance reserve for cotton-crop insurance should be at least twice as large as the maximum shortage of 678,424 bales shown in the table.



